

# HP StorageWorks

## 1050EX PCI-Express host bus adapter for Windows installation guide

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1050EX PCI-Express host bus adapter for Windows installation guide

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## About this guide

This guide provides information about:

- Installing, configuring, and troubleshooting HP StorageWorks 1050EX PCIe host bus adapter (HBA) for Microsoft® Windows® operating systems
- Contacting technical support for additional assistance

## Intended audience

This guide is intended for system administrators who are experienced with the following:

- Windows operating system
- HBAs

## Related documentation





In addition to this guide, refer to the *HP StorageWorks Emulex host bus adapters for 32-bit Windows systems release notes*.

These and other HP documents can be found on the HP web site: <http://www.docs.hp.com>.

# Document conventions and symbols

**Table 1** Document conventions

| Convention  | Element  |
|---|--|
| Medium blue text: <a href="#">Figure 1</a>  | Cross-reference links and e-mail addresses   |
| Medium blue, underlined text<br>( <a href="http://www.hp.com">http://www.hp.com</a> ) | Web site addresses   |
| <b>Bold font</b>  | <ul style="list-style-type: none"><li>• Key names</li><li>• Text typed into a GUI element, such as into a box</li><li>• GUI elements that are clicked or selected, such as menu and list items, buttons, and check boxes</li></ul> |
| <i>Italics font</i>   | Text emphasis  |
| Monospace font  | <ul style="list-style-type: none"><li>• File and directory names</li><li>• System output</li><li>• Code</li><li>• Text typed at the command-line</li></ul>   |
| <i>Monospace, italic font</i>   | <ul style="list-style-type: none"><li>• Code variables</li><li>• Command-line variables</li></ul>  |
| <b>Monospace, bold font</b>   | Emphasis of file and directory names, system output, code, and text typed at the command line  |

-  **WARNING!** Indicates that failure to follow directions could result in bodily harm or death.
-  **CAUTION:** Indicates that failure to follow directions could result in damage to equipment or data.
-  **IMPORTANT:** Provides clarifying information or specific instructions.
-  **NOTE:** Provides additional information.

---

 **TIP:** Provides helpful hints and shortcuts.

---

## HP technical support

Telephone numbers for worldwide technical support are listed on the HP support web site:

<http://www.hp.com/support/>.

Collect the following information before calling:

- Technical support registration number (if applicable)
- Product serial numbers
- Product model names and numbers
- Applicable error messages
- Operating system type and revision level
- Detailed, specific questions

For continuous quality improvement, calls may be recorded or monitored.

HP strongly recommends that customers sign up online using the Subscriber's choice web site:

<http://www.hp.com/go/e-updates>.

- Subscribing to this service provides you with e-mail updates on the latest product enhancements, newest versions of drivers, and firmware documentation updates as well as instant access to numerous other product resources.
- After signing up, you can quickly locate your products by selecting **Business support** and then **Storage** under Product Category.

## HP-authorized reseller

For the name of your nearest HP-authorized reseller:

- In the United States, call 1-800-345-1518.
- Elsewhere, visit the HP web site: <http://www.hp.com>. Then click **Contact HP** to find locations and telephone numbers.

## Helpful web sites

For third-party product information, see the following HP web sites:

- <http://www.hp.com>
- <http://www.hp.com/go/storage>
- <http://www.hp.com/support/>
- <http://www.docs.hp.com>





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# 1 1050EX HBA features

This chapter describes the following features of the 1050EX HBA:

- [Performance specifications](#), page 10
- [Environmental specifications](#), page 11
- [Physical specifications](#), page 11

## Performance specifications

The 1050EX HBA offers highly integrated 2Gb/s Fibre Channel (FC) connectivity solutions for storage area networks (SAN), and is designed for use with PCI-Express servers. The 1050EX HBA is a single-port HBA in a standard-height, half-length card form factor.

The PCI-Express architecture is an open specification designed to address the wide range of current and future system interconnect requirements. It also defines a flexible, scalable, high-speed, serial, point-to-point, hot pluggable/hot swappable interconnect that is software-compatible with PCI. This architecture allows the 1050EX HBA to use the same drivers and management tools as the HBAs for PCI and PCI-X systems.

This HBA has the following performance features:

- Compliant with the PCI-Express 1.0a specification:
  - x1 or x4 lane link interface at 2.5Gbit/s per lane (auto-negotiated with system)
  - VC0 (1 Virtual Channel) and TC0 (1 Traffic Class) support
  - Configuration/IO/memory read/write, completion, message support
  - 64-bit addressing support
  - 32-bit CRC for all transmitted data packets
  - 16-bit CRC on all link message information
- Compatible with both 1 Gigabit (1Gb) and 2 Gigabit (2Gb) FC Interface
- Auto-negotiation between 1Gb and 2Gb link attachments
- High performance FC host adapter with dual internal processors
- Full support for all FC topologies: point-to-point, arbitrated loop, and fabric
- Full support for FC service class 2 and 3
- Maximum FC throughput achieved via full duplex hardware support
- End-to-end data path-parity and CRC protection, including internal data path RAMs
- Architectural support for multiple upper layer protocols
- Internal 32-bit ARM 946E-S processor with instruction and data cache
- Internal SerDes 1Gb/2Gb core
- High speed QDR II external memory with separate read and write data paths
- Device drivers for Windows 2000 and Windows Server 2003
- Drivers for both SCSI and IP (where supported) Protocols
- Driver support for Fibre Channel boot functionality:
  - On-board context management by firmware
  - Up to 510 FC port logins
  - Up to 1024 concurrent exchanges
  - I/O multiplexing down to FC frame level
- Large data buffers capable of supporting 16 buffer-to-buffer (BB) credits for short-wave applications
- Link management and recovery handled by firmware
- On-board diagnostic trace capability accessible via optional connection

## Environmental specifications

Table 2 lists the 1050EX HBA environmental specifications.

**Table 2** 1050EX HBA Environmental Specifications

| Environment                        | Minimum       | Maximum      |
|------------------------------------|---------------|--------------|
| Operating temperature              | 0 °C/32 °F    | 55 °C/131 °F |
| Storage temperature                | -20 °C/-40 °F | 70 °C/158 °F |
| Relative humidity (non-condensing) | 10%           | 90%          |
| Storage humidity (non-condensing)  | 5%            | 95%          |

## Physical specifications

Table 3 lists the 1050EX HBA physical specifications.

**Table 3** 1050EX HBA physical specifications

| Parameter           | Range  |
|---------------------|--|
| Media interface     | The controller interfaces to the physical media through an FC-0 Media Interface (FC-Pi compliant transceiver), and then connects through a single optical fiber LC connector.  |
| Physical dimensions | PCI-Express standard half-length card size (4.367" x 6.600").  |
| Power requirements  | PCI-Express x4:<br>2.9/4.2 watts at +3.3 VDC<br>10.4/14.9 watts at +12.0 VDC<br>13.3/19.1 watts (total power)  |
| Agency approvals    | Class 1 Laser Product per DHHS 21CFR (J) & EN60825-1<br>UL recognized to UL 60950-1:2003<br>CUR recognized to CSA 22.2, No. 60950-1-03<br>Baurt-certified by TUV to EN60950<br>FCC Rules, Part 15, Class A<br>Industry Canada, ICES-003, Class A<br>EMC Directive 89/336/EEC (CE Mark)<br>EN55022, Class A<br>EN55024<br>Australian EMC Framework (C-Tick Mark)<br>AS/NZS 3548:1995 Class A<br>Japan VCCI, Class A<br>Taiwan BSMI, Class A<br>Korea MIC, Class A |



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## 2 Installing the HBA

This chapter describes the following procedure for installing the 1050EX HBA:

- [Installation prerequisites](#), page 14
- [Installing the HBA](#), page 15

Refer to your server's documentation for additional information about installing the HBA.

---

⚠ **WARNING!** Disconnect the host from the power source before installing the HBA. To reduce the risk of personal injury from hot surfaces, allow the internal server or workstation components to cool before touching.

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⚠ **WARNING!** Electrostatic discharge (ESD) can damage electronic components. Be sure you are properly grounded before beginning this procedure.


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## Installation prerequisites

Before you begin, make sure you have the following:

- An optical multimode cable with an LC-style duplex connector.
- A system with a 4x PCI-Express slot minimum.

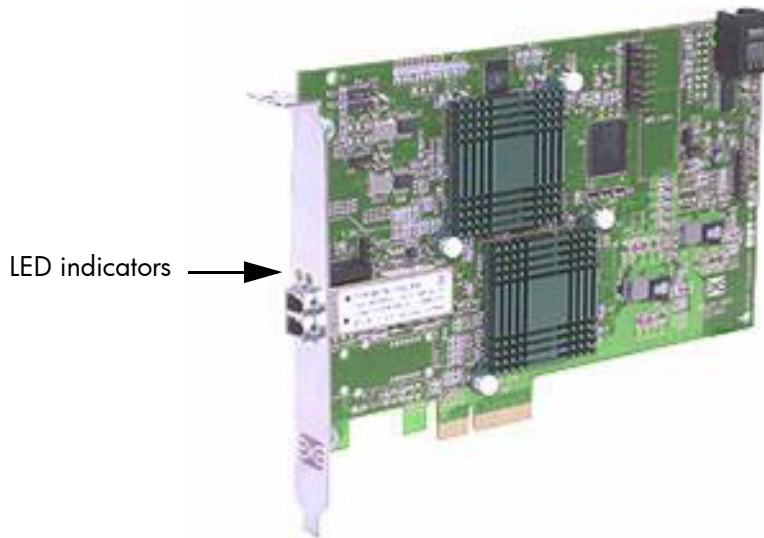
---

 **NOTE:** The HBA does not allow normal data transmission on an optical link unless it is connected to another similar or compatible laser product (that is, multimode to multimode).

---

## 1050EX HBA components

Figure 1 shows the 1050EX HBA components that are referenced later in this document.




**Figure 1** 1050EX components

## Recording reference numbers

Each HBA ships with a unique address identifier that is stored in flash memory. Fibre Channel industry standards issue two unique identifiers: world wide port name (WWPN) and node name (NN), each of which is derived from the HBA's IEEE address. Combined, the WWPN and NN create the world wide Name (WWN) which is an 8-byte identifier that uniquely identifies an HBA on an FC circuit. The WWN address and serial number are clearly marked on the HBA. Record the addresses on the lines below for future reference.

In addition, each HBA has a unique serial number that is located on the bottom of the HBA. Check the HBA and record its serial number so that you have the number in the unlikely event that the NVRAM is corrupted.

---

 **NOTE:** The WWN is a static identifier that cannot be changed.

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WWN address: \_\_\_\_\_

Serial number: \_\_\_\_\_

## Installing the HBA

Use the following procedure for installing the HBA into a computer.


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 **CAUTION:** Be sure to observe the ESD precautions for this procedure.

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1. Make sure the computer is powered off.
2. Remove the screws on the computer cover, and then remove the cover.
3. Wearing an anti-static wrist strap, remove the blank panel from an empty 4x, 8x, or 16x PCI-Express bus slot.
4. Insert the HBA into the empty PCI-Express slot. Press firmly until the HBA is seated.
5. Secure the HBA's mounting bracket to the case with the panel clip.
6. Replace the computer case and tighten case screws.
7. Attach media:
  - Connect the fiber optic cable to the LC connector on the HBA.
  - Connect the other end of the cable to the Fibre Channel device.

---

 **NOTE:** The HBA does not allow normal data transmission on an optical link unless the link is connected to a similar or compatible laser product. That is, both products must be multimode to multimode.

---

You are now ready to apply power to the computer.





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## 3 Installing the Windows drivers

This chapter contains step-by-step instructions for installing the Windows SCSI/PORT miniport driver and Storport miniport driver.

Prior to installing or updating drivers, obtain the latest *HP StorageWorks Emulex host bus adapters for 32-bit Windows systems release notes* available from the HP web site:

<http://h18006.www1.hp.com/storage/saninfrastructure.html>.

Review any restrictions or mandatory hot fixes that apply to your configuration and operating system.

# Installing the Windows device drivers using the HP Smart Component kit

This section describes the instructions for installing the Windows SCSI/PORT miniport and Storport miniport drivers. To install the latest SCSI/PORT or Storport driver, you must use the HP Smart Component kit.

Note the following:

- Prior to installing or updating drivers, refer to the *HP StorageWorks Emulex host bus adapters for 32-bit Windows systems release notes* for driver installation restrictions.
- HP does not support driver updates using Device Manager. Using Device Manager can cause registry parameter deletions and erratic behavior.

Download and install the HP Smart Component kit as follows:

1. Access the HP StorageWorks SAN infrastructure page:  
<http://h18006.www1.hp.com/storage/saninfrastructure.html>.
2. Select the 1050EX HBA from the Fibre Channel Host Bus Adapters list.  
The 1050EX web page appears.
3. Click **Software and drivers**.
4. Select **download drivers and software**.
5. Select a windows operating system.
6. In the **Driver Storage Controllers - FC HBA** section, click **obtain software** in the row for either the **SCSI/port driver component** or **Storport driver component for KGPSA-CB, FCA2101, FCA2355, FCA2404, FCA2404C, FCA2408, A7387A, A7388A, and 1050EX HBAs**.
7. Click **Accept** in the license page.
8. Open or save the installation program:
  - Click Open to run the driver software installation immediately.
  - Click Save to save the Smart Component executable to your system and run the installation at a later time.
9. Click **Install** to install the driver software.
10. Click **Reboot** to complete the installation.

---

## 4 Troubleshooting

The Power-On Self Test (POST) and the Windows Event Viewer are utilities you can use for troubleshooting the HBA. This chapter explains how to use these utilities in the event of an HBA problem.

## POST conditions and results

Table 4 lists the HBA LED states and describes each state. Figure 1 on page 14 shows the position of the POST LED indicators.

If the LEDs indicate a failure during POST:

1. Make sure the HBA is seated firmly in the PCI slot.
2. Verify that the fiber cable connection to the HBA is secure.

**Table 4** POST LED states

| Amber LED (L1)       | Green LED (L2) | State                               |
|----------------------|----------------|-------------------------------------|
| Off                  | Off            | Wake-up failure (dead board)        |
| On                   | Off            | POST failure (dead board)           |
| Slow blink (1 Hz)    | Off            | Wake-up failure (dead board)        |
| Fast blink (4 Hz)    | Off            | Failure in POST (dead board)        |
| Flashing (irregular) | Off            | POST processing in progress         |
| Off                  | On             | Failure while functioning           |
| On                   | On             | Failure while functioning           |
| Slow blink (1 Hz)    | On             | Normal—1 Gb link rate               |
| Fast blink (4 Hz)    | On             | Normal—2 Gb link rate               |
| Off                  | Blink (1 Hz)   | Normal—link down or not yet started |

## Using the Event Viewer

The miniport drivers verify the condition of the HBA's POST LED states. If there is a failure or a suspected failure, an error log entry is issued to the Windows Event log.

Use the following procedure to view the Event log.

1. Click **Start > Programs > Administrative Tools > Event Viewer** or right click **My Computer** and select **Manage**.
2. Click on Event Viewer in Computer Management.  
The Event Viewer window appears.
3. Refer to "[Windows miniport event log codes](#)" on page 21 for information about interpreting the event codes.

## Windows miniport event log codes

The Emulex miniport drivers record error events in the Windows System Event log. Both the SCSIPIRT and Storport miniport drivers have documentation that describes event log format and how to interpret information contained within. Use the documentation specific to each driver. Do not attempt to decode Storport miniport event log entries using the SCSIPIRT miniport documentation or to decode SCSIPIRT event log entries using Storport miniport documentation.

Obtain the relevant documentation from the Smart Component you used to install the driver as follows:

1. Click the Smart Component.
2. Click **EXTRACT**.
3. In the pop-up window, select a folder for extracting the files, and click **OK**.
4. Review event log information as follows:
  - SCSIPIRT miniport driver event log information resides in `readme.txt`.
  - Storport miniport driver event information resides in `ELXSTOR Error Logg Codes.doc`.



---

# A Regulatory compliance and safety

## Laser device

All HP systems equipped with a laser device comply with safety standards, including International Electrotechnical Commission (IEC) 825. With specific regard to the laser, the equipment complies with laser product performance standards set by government agencies as a Class 1 laser product. The product does not emit hazardous light.

## Laser safety warning

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⚠ **WARNING!** To reduce the risk of exposure to hazardous radiation:

- Do not try to open the laser device enclosure. There are no user-serviceable components inside.
  - Do not operate controls, make adjustments, or perform procedures to the laser device other than those specified herein.
  - Allow only HP-authorized service technicians to repair the laser device.
- 

## Certification and classification information

This product contains a laser internal to the fiber optic (FO) transceiver for connection to the Fibre Channel communications port.

In the USA, the FO transceiver is certified as a Class 1 laser product conforming to the requirements contained in the Department of Health and Human Services (DHHS) regulation 21 CFR, Subchapter J. A label on the plastic FO transceiver housing indicates the certification.

Outside the USA, the FO transceiver is certified as a Class 1 laser product conforming to the requirements contained in IEC 825-1:1993 and EN 60825-1:1994, including Amendment 11:1996 and Amendment 2:2001.

## Laser product label

The optional label in [Figure 2](#) or equivalent may be located on the surface of the HP-supplied laser device.



This optional label indicates that the product is classified as a CLASS 1 LASER PRODUCT. This label may appear on the laser device installed in your product.

**Figure 2** Class 1 laser product label

## International notices and statements

### Canadian notice (avis Canadien)

#### Class A equipment

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

### European Union notice

Products bearing the CE marking comply with the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community and if this product has telecommunication functionality, the R&TTE Directive (1999/5/EC).

Compliance with these directives implies conformity to the following European Norms (in parentheses are the equivalent international standards and regulations):

- EN55022 (CISPR 22) - Electromagnetic Interference
- EN55024 (IEC61000-4-2, IEC61000-4-3, IEC61000-4-4, IEC61000-4-5, IEC61000-4-6, IEC61000-4-8, IEC61000-4-11) - Electromagnetic Immunity
- Power Quality:
  - EN61000-3-2 (IEC61000-3-2) - Power Line Harmonics
  - EN61000-3-3 (IEC61000-3-3) - Power Line Flicker
- EN60950 (IEC60950) - Product Safety
- Also approved under UL 60950/CSA C22.2 No. 60950-00, Safety of Information Technology Equipment.



## BSMI notice

### 警告使用者:

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

## Japanese notice

ご使用になっている装置にVCCIマークが付いていましたら、次の説明文をお読み下さい。

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。  
取扱説明書に従って正しい取り扱いをして下さい。

VCCIマークが付いていない場合には、次の点にご注意下さい。

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## Korean notices

### A급 기기 (업무용 정보통신기기)

이 기기는 업무용으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며, 만약 잘못판매 또는 구입하였을 때에는 가정용으로 교환하시기 바랍니다.

### B급 기기 (가정용 정보통신기기)

이 기기는 가정용으로 전자파적합등록을 한 기기로서 주거지역에서는 물론 모든 지역에서 사용할 수 있습니다.

# Safety

## Electrostatic discharge

To prevent damage to the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

## Preventing electrostatic damage

To prevent electrostatic damage, observe the following precautions:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly (see "[Grounding methods](#)" on page 27).

## Grounding methods

There are several methods for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm ( $\pm 10$  percent) resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
- Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, have an HP-authorized reseller install the part.



**NOTE:** For more information on static electricity, or assistance with product installation, contact your HP-authorized reseller.

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